CLAIMS

1. Method for managing a communication between a first network element and a second network element, wherein

the communication is performed via a network on a packet basis,

acknowlegdment messages acknowledging receipt of packets are returned to the network element having sent these packets, and

a congestion control is performed which variably defines an allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, wherein said allowable number of packets is reduced in case of packet loss during transmission,

wherein, when the first network element performs a hand-over and sends a message informing the network or a network element on the hand-over, the network or network element changes the congestion control to provide faster recovery rate of said allowable number after handover as compared to the recovery rate of said allowable number after packet loss.

2. Method according to claim 1, wherein

the congestion control provides a congestion window of variable size, the size of the congestion window defining said allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, and the size being controlled dependant on the number of sent packets for which no acknowledgment messages have been received so that the window size is reduced in case of packet loss during transmission,

wherein, when the first network element performs a hand-over and sends a message informing the network or a network

element on the hand-over, the network or network element changes the congestion window size control to provide faster recovery rate of the window size after handover as compared to the recovery rate of the window size after packet loss.

3. Method according to claim 1 or 2, wherein said congestion control is performed in at least one of the first and second network elements.

4. Method according to any one of the preceding claims, wherein the first network element is a mobile node which, when moving from one subnet into another foreign subnet, acquires a care-of address, and sends said message to its home network and/or to a correspondent node informing the network or node on the care-of-address.

5. Method according to any one of the preceding claims, wherein said message is a "Binding Update" message.

6. Method according to any one of the preceding claims, wherein said second network element comprises a fast retransmit and fast recovery algorithm so as to provide said faster recovery rate, wherein, when the message is sent from the first network element to the second network element, the second network element, when receiving the message, triggers the invocation of said fast retransmit and fast recovery algorithm.

7. Method according to any one of the preceding claims, wherein said first network element comprises a fast retransmit and fast recovery algorithm so as to provide said faster recovery rate, and is adapted to trigger, when generating said message, the invocation of said fast retransmit and fast recovery algorithm.

8. Method according to any one of the preceding claims, wherein the faster recovery rate includes a step of increasing the size of a congestion window in a step-wise manner.

9. Method according to claim 8, wherein the size of the congestion window is step-wise increased to 20% to 100% of the size of the congestion value before start of the handover.

10. Method according to claim 9, wherein the size of the congestion window is step-wise increased to at least approximately 50% of the size of the congestion value before start of the handover.

11. Method according to any one of the preceding claims, wherein the faster recovery rate is implemented by increasing the size of a congestion window in a step-wise manner to a value lying in a range from more than a minimum window size up to, and including the size of the window before handover, and by subsequent ramp-like or exponential increase of the congestion window size.

12. Method according to any one of the preceding claims, wherein the congestion control includes increasing the size of a congestion window in an exponential manner up to a threshold value and a subsequent ramp-like increasing of the congestion window size, wherein the faster recovery rate is implemented by setting the threshold value to at least one-half of, and up to, the previous value of the congestion window before start of the handover.

13. Method according to any one of the preceding claims, wherein the second network element is a correspondent node.

14. Method according to any one of the preceding claims, wherein at least one of the first and second network elements comprises a congestion control means, and wherein when generating or receiving said message, the first and/or second network element informs its congestion control means which in response triggers the invocation of a fast retransmit and fast recovery algorithm.

15. Method according to any one of the preceding claims, wherein at least one of the first and second network elements comprises a congestion control means, wherein the network element when generating or receiving said message, sends a signal to the congestion control means, the signal indicating to the congestion control means that the congestion control is to be changed so as to provide said faster recovery rate.

16. Method according to claim 15, wherein the signal is implemented by duplicating ACK packets by an IP layer function to a TCP layer function.

17. Method according to any one of the preceding claims, wherein the communication between the first and second network elements is an Mobile IPv6-based communication.

18 System for managing a communication between a first network element and a second network element, wherein

the communication is performed via a network on a packet basis, and acknowlegdment messages acknowledging receipt of packets are returned to the network element having sent these packets, comprising

congestion control means for performing a congestion control which variably defines an allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, wherein said allowable number of packets is reduced in case of packet loss during transmission,

wherein, when the first network element performs a hand-over and sends a message informing the network or a network element on the hand-over, the congestion control means changes the congestion control to provide faster recovery rate of said allowable number after handover as compared to the recovery rate of said allowable number after packet loss.

19. System according to claim 18, wherein
the congestion control means provides a congestion window of variable size, the size of the congestion window defining said allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, and the size being controlled dependant on the number of sent packets for which no acknowledgment messages have been received so that the window size is reduced in case of packet loss during transmission,
wherein, when the first network element performs a hand-over and sends a message informing the network or a network element on the hand-over, the congestion control means is adapted to change the congestion window size control to provide faster recovery rate of the window size after handover as compared to the recovery rate of the window size after packet loss.

20. System according to claim 18 or 19, wherein said congestion control means is provided in at least one of the first and second network elements.

21. System according to any one of the preceding system claims, wherein the first network element is a mobile node which, when moving from one subnet into another foreign subnet, acquires a care-of address, and sends said message to its home network informing the latter on the care-of-address.

22. System according to any one of the preceding system

claims, wherein said message is a "Binding Update" message.

23. System according to any one of the preceding system claims, wherein said second network element comprises a fast retransmit and fast recovery algorithm so as to provide said faster recovery rate, wherein, when the message is sent from the first network element to the second network element, the second network element, when receiving the message, triggers the invocation of said fast retransmit and fast recovery algorithm.

24. System according to any one of the preceding system claims, wherein said first network element comprises a fast retransmit and fast recovery algorithm so as to provide said faster recovery rate, and is adapted to trigger, when generating said message, the invocation of said fast retransmit and fast recovery algorithm.

25. System according to any one of the preceding system claims, wherein the faster recovery rate includes a step of increasing the size of a congestion window in a step-wise manner.

26. System according to claim 25, wherein the size of the congestion window is step-wise increased to 20% to 100% of the size of the congestion value before start of the handover.

27. System according to claim 26, wherein the size of the congestion window is step-wise increased to at least approximately 50% of the size of the congestion value before start of the handover.

28. System according to any one of the preceding system claims, wherein the faster recovery rate is implemented by

increasing the size of a congestion window in a step-wise manner to a value lying in a range from more than a minimum window size up to, and including the size of the window before handover, and by subsequent ramp-like or exponential increase of the congestion window size.

29. System according to any one of the preceding system claims, wherein the congestion control includes increasing the size of a congestion window in an exponential manner up to a threshold value and a subsequent ramp-like increasing of the congestion window size, wherein the faster recovery rate is implemented by setting the threshold value to at least one-half of, and up to, the previous value of the congestion window before start of the handover.

30. System according to any one of the preceding system claims, wherein the second network element is a correspondent node.

31. System according to any one of the preceding system claims, wherein at least one of the first and second network elements comprises a congestion control means, and wherein when generating or receiving said message, the first and/or second network element informs its congestion control means which in response triggers the invocation of a fast retransmit and fast recovery algorithm.

32. System according to any one of the preceding system claims, wherein at least one of the first and second network elements comprises a congestion control means, wherein the network element when generating or receiving said message, sends a signal to the congestion control means, the signal indicating to the congestion control means that the congestion control is to be changed so as to provide said faster recovery rate.

33. System according to claim 32, wherein the signal is implemented by duplicating ACK packets by an IP layer function to a TCP layer function.

34. System according to any one of the preceding system claims, wherein the communication between the first and second network elements is an Mobile IPv6-based communication.

35. Network element to be used in a system for managing a communication between network elements, preferably as defined in claim 18, wherein the communication is performed via a network on a packet basis, and acknowlegdment messages acknowledging receipt of packets are returned to the network element having sent these packets, comprising

congestion control means for performing a congestion control which variably defines an allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, wherein said allowable number of packets is reduced in case of packet loss during transmission, wherein, when the network element performs a hand-over and sends a message informing the network or a network element on the hand-over, the congestion control means changes the congestion control to provide faster recovery rate of said allowable number after handover as compared to the recovery rate of said allowable number after packet loss.

36. Network element according to claim 35, wherein the congestion control means provides a congestion window of variable size, the size of the congestion window defining said allowable number of packets which can be sent before receipt of acknowledgment messages for these packets, and the size being controlled dependant on the number of sent packets for which no acknowledgment messages have been received so

that the window size is reduced in case of packet loss during transmission,
wherein, when the network element performs a hand-over and sends a message informing the network or a network element on the hand-over, the congestion control means changes the congestion window size control to provide faster recovery rate of the window size after handover as compared to the recovery rate of the window size after packet loss.

37. Network element according to claim 35 or 36, wherein said network element comprises a fast retransmit and fast recovery algorithm so as to provide said faster recovery rate, and is adapted to trigger, when generating said message, the invocation of said fast retransmit and fast recovery algorithm.

38. Network element according to claim 35, wherein the faster recovery rate includes a step of increasing the size of a congestion window in a step-wise manner, wherein the size of the congestion window is step-wise increased to 20% to 100% of the size of the congestion value before start of the handover.

39. Network element according to claim 37, wherein the size of the congestion window is step-wise increased to at least approximately 50% of the size of the congestion value before start of the handover.

40. Network element according to any one of claims 35 to 39, wherein the congestion control includes increasing the size of a congestion window in an exponential manner up to a threshold value and a subsequent ramp-like increasing of the congestion window size, wherein the faster recovery rate is implemented by setting the threshold value to at least one-half of, and up to, the previous value of the congestion

window before start of the handover.

41. Network element according to any one of the preceding network element claims, wherein the network element comprises a congestion control means, and wherein when generating or receiving said message, the network element informs its congestion control means which in response triggers the invocation of a fast retransmit and fast recovery algorithm.

42. Network element according to any one of claims 35 to 41, wherein the network element comprises a congestion control means, wherein the network element when generating or receiving said message, sends a signal to the congestion control means, the signal indicating to the congestion control means that the congestion control is to be changed so as to provide said faster recovery rate.

43. Network element according to claim 42, wherein the signal is implemented by duplicating ACK packets by an IP layer function to aTCP layer function.